B. Brumbacle (handwritten)

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RAW SEQUENCE LISTING   DATE: 07/30/2001   *p #8*
PATENT APPLICATION: US/09/528,031   TIME: 15:59:55

Input Set : **A:\seqlst.txt**
Output Set: **N:\CRF3\07302001\I528031.raw**   ENTERED

SEQUENCE LISTING
```
 4 (1) GENERAL INFORMATION:
 6       (i) APPLICANT: SHYJAN, Andrew
 8      (ii) TITLE OF INVENTION: NOVEL MULTIDRUG RESISTANCE-ASSOCIATED
 9                              POLYPEPTIDE
11     (iii) NUMBER OF SEQUENCES: 8
13      (iv) CORRESPONDENCE ADDRESS:
14           (A) ADDRESSEE: LAHIVE & COCKFIELD, LLP
15           (B) STREET: 28 State Street
16           (C) CITY: Boston
17           (D) STATE: Massachusetts
18           (E) COUNTRY: USA
19           (F) ZIP: 02109
21       (v) COMPUTER READABLE FORM:
22           (A) MEDIUM TYPE: Floppy disk
23           (B) COMPUTER: IBM PC compatible
24           (C) OPERATING SYSTEM: PC-DOS/MS-DOS
25           (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
27      (vi) CURRENT APPLICATION DATA:
C--> 28      (A) APPLICATION NUMBER: US/09/528,031
C--> 29      (B) FILING DATE: 17-Mar-2001
30           (C) CLASSIFICATION:
32    (viii) ATTORNEY/AGENT INFORMATION:
33           (A) NAME: Elizabeth A. Hanley
34           (B) REGISTRATION NUMBER: 33,505
35           (C) REFERENCE/DOCKET NUMBER: MNI-056CP
37      (ix) TELECOMMUNICATION INFORMATION:
38           (A) TELEPHONE: (617) 227-7400
39           (B) TELEFAX: (617) 742-4214
42 (2) INFORMATION FOR SEQ ID NO: 1:
44       (i) SEQUENCE CHARACTERISTICS:
45           (A) LENGTH: 4847 base pairs
46           (B) TYPE: nucleic acid
47           (C) STRANDEDNESS: single
48           (D) TOPOLOGY: linear
50      (ix) FEATURE:
51           (A) NAME/KEY: CDS
52           (B) LOCATION: 116..4426
54      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
56 GGCTCATGCT CGGGAGCGTG GTTGAGCGGC TGGCGCGGTT GTCCTGGAGC AGGGGCGCAG        60
58 GAATTCTGAT GTGAAACTAA CAGTCTGTGA GCCCTGGAAC CTCCACTCAG AGAAG ATG       118
59                                                                  Met
60                                                                    1
62 AAG GAT ATC GAC ATA GGA AAA GAG TAT ATC ATC CCC AGT CCT GGG TAT        166
63 Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly Tyr
64               5                  10                  15
66 AGA AGT GTG AGG GAG AGA ACC AGC ACT TCT GGG ACG CAC AGA GAC CGT        214
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67 Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp Arg
68          20                  25                  30
70 GAA GAT TCC AAG TTC AGG AGA ACT CGA CCG TTG GAA TGC CAA GAT GCC        262
71 Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp Ala
72          35                  40                  45
74 TTG GAA ACA GCA GCC CGA GCC GAG GGC CTC TCT CTT GAT GCC TCC ATG        310
75 Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Alà Ser Met
76  50                  55                  60                  65
78 CAT TCT CAG CTC AGA ATC CTG GAT GAG GAG CAT CCC AAG GGA AAG TAC        358
79 His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys Tyr
80                  70                  75                  80
82 CAT CAT GGC TTG AGT GCT CTG AAG CCC ATC CGG ACT ACT TGC AAA CAC        406
83 His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Cys Lys His
84              85                  90                  95
86 CAG CAC CCA GTG GAC AAT GCT GGG CTT TTT TCC TGT ATG ACT TTT TCG        454
87 Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe Ser
88          100                 105                 110
90 TGG CTT TCT TCT CTG GCC CGT GTG GCC CAC AAG AAG GGG GAG CTC TCA        502
91 Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu Ser
92      115                 120                 125
94 ATG GAA GAC GTG TGG TCT CTG TCC AAG CAC GAG TCT TCT GAC GTG AAC        550
95 Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val Asn
96 130                 135                 140                 145
98 TGC AGA AGA CTA GAG AGA CTG TGG CAA GAA GAG CTG AAT GAA GTT GGG        598
99 Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val Gly
100                 150                 155                 160
102 CCA GAC GCT GCT TCC CTG CGA AGG GTT GTG TGG ATC TTC TGC CGC ACC       646
103 Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg Thr
104                 165                 170                 175
106 AGG CTC ATC CTG TCC ATC GTG TGC CTG ATG ATC ACG CAG CTG GCT GGC       694
107 Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala Gly
108             180                 185                 190
110 TTC AGT GGA CCA GCC TTC ATG GTG AAA CAC CTC TTG GAG TAT ACC CAG       742
111 Phe Ser Gly Pro Ala Phe Met Val Lys His Leu Leu Glu Tyr Thr Gln
112     195                 200                 205
114 GCA ACA GAG TCT AAC CTG CAG TAC AGC TTG TTG TTA GTG CTG GGC CTC       790
115 Ala Thr Glu Ser Asn Leu Gln Tyr Ser Leu Leu Leu Val Leu Gly Leu
116 210                 215                 220                 225
118 CTC CTG ACG GAA ATC GTG CGG TCT TGG TCG CTT GCA CTG ACT TGG GCA       838
119 Leu Leu Thr Glu Ile Val Arg Ser Trp Ser Leu Ala Leu Thr Trp Ala
120                 230                 235                 240
122 TTG AAT TAC CGA ACC GGT GTC CGC TTG CGG GGG GCC ATC CTA ACC ATG       886
123 Leu Asn Tyr Arg Thr Gly Val Arg Leu Arg Gly Ala Ile Leu Thr Met
124             245                 250                 255
126 GCA TTT AAG AAG ATC CTT AAG TTA AAG AAC ATT AAA GAG AAA TCC CTG       934
127 Ala Phe Lys Lys Ile Leu Lys Leu Lys Asn Ile Lys Glu Lys Ser Leu
128         260                 265                 270
130 GGT GAG CTC ATC AAC ATT TGC TCC AAC GAT GGG CAG AGA ATG TTT GAG       982
131 Gly Glu Leu Ile Asn Ile Cys Ser Asn Asp Gly Gln Arg Met Phe Glu
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132      275                    280                    285
134 GCA GCA GCC GTT GGC AGC CTG CTG GCT GGA GGA CCC GTT GTT GCC ATC      1030
135 Ala Ala Ala Val Gly Ser Leu Leu Ala Gly Gly Pro Val Val Ala Ile
136 290                    295                    300                    305
138 TTA GGC ATG ATT TAT AAT GTA ATT ATT CTG GGA CCA ACA GGC TTC CTG      1078
139 Leu Gly Met Ile Tyr Asn Val Ile Ile Leu Gly Pro Thr Gly Phe Leu
140                    310                    315                    320
142 GGA TCA GCT GTT TTT ATC CTC TTT TAC CCA GCA ATG ATG TTT GCA TCA      1126
143 Gly Ser Ala Val Phe Ile Leu Phe Tyr Pro Ala Met Met Phe Ala Ser
144                    325                    330                    335
146 CGG CTC ACA GCA TAT TTC AGG AGA AAA TGC GTG GCC GCC ACG GAT GAA      1174
147 Arg Leu Thr Ala Tyr Phe Arg Arg Lys Cys Val Ala Ala Thr Asp Glu
148            340                    345                    350
150 CGT GTC CAG AAG ATG AAT GAA GTT CTT ACT TAC ATT AAA TTT ATC AAA      1222
151 Arg Val Gln Lys Met Asn Glu Val Leu Thr Tyr Ile Lys Phe Ile Lys
152      355                    360                    365
154 ATG TAT GCC TGG GTC AAA GCA TTT TCT CAG AGT GTT CAG AAA ATC CGC      1270
155 Met Tyr Ala Trp Val Lys Ala Phe Ser Gln Ser Val Gln Lys Ile Arg
156 370                    375                    380                    385
158 GAG GAG GAG CGT CGG ATA TTG GAA AAA GCC GGG TAC TTC CAG AGC ATC      1318
159 Glu Glu Glu Arg Arg Ile Leu Glu Lys Ala Gly Tyr Phe Gln Ser Ile
160                    390                    395                    400
162 ACT GTG GGT GTG GCT CCC ATT GTG GTG GTG ATT GCC AGC GTG GTG ACC      1366
163 Thr Val Gly Val Ala Pro Ile Val Val Val Ile Ala Ser Val Val Thr
164            405                    410                    415
166 TTC TCT GTT CAT ATG ACC CTG GGC TTC GAT CTG ACA GCA GCA CAG GCT      1414
167 Phe Ser Val His Met Thr Leu Gly Phe Asp Leu Thr Ala Ala Gln Ala
168            420                    425                    430
170 TTC ACA GTG GTG ACA GTC TTC AAT TCC ATG ACT TTT GCT TTG AAA GTA      1462
171 Phe Thr Val Val Thr Val Phe Asn Ser Met Thr Phe Ala Leu Lys Val
172      435                    440                    445
174 ACA CCG TTT TCA GTA AAG TCC CTC TCA GAA GCC TCA GTG GCT GTT GAC      1510
175 Thr Pro Phe Ser Val Lys Ser Leu Ser Glu Ala Ser Val Ala Val Asp
176 450                    455                    460                    465
178 AGA TTT AAG AGT TTG TTT CTA ATG GAA GAG GTT CAC ATG ATA AAG AAC      1558
179 Arg Phe Lys Ser Leu Phe Leu Met Glu Glu Val His Met Ile Lys Asn
180                    470                    475                    480
182 AAA CCA GCC AGT CCT CAC ATC AAG ATA GAG ATG AAA AAT GCC ACC TTG      1606
183 Lys Pro Ala Ser Pro His Ile Lys Ile Glu Met Lys Asn Ala Thr Leu
184            485                    490                    495
186 GCA TGG GAC TCC TCC CAC TCC AGT ATC CAG AAC TCG CCC AAG CTG ACC      1654
187 Ala Trp Asp Ser Ser His Ser Ser Ile Gln Asn Ser Pro Lys Leu Thr
188            500                    505                    510
190 CCC AAA ATG AAA AAA GAC AAG AGG GCT TCC AGG GGC AAG AAA GAG AAG      1702
191 Pro Lys Met Lys Lys Asp Lys Arg Ala Ser Arg Gly Lys Lys Glu Lys
192      515                    520                    525
194 GTG AGG CAG CTG CAG CGC ACT GAG CAT CAG GCG GTG CTG GCA GAG CAG      1750
195 Val Arg Gln Leu Gln Arg Thr Glu His Gln Ala Val Leu Ala Glu Gln
196 530                    535                    540                    545
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198 AAA GGC CAC CTC CTC CTG GAC AGT GAC GAG CGG CCC AGT CCC GAA GAG    1798
199 Lys Gly His Leu Leu Leu Asp Ser Asp Glu Arg Pro Ser Pro Glu Glu
200             550                 555                 560
202 GAA GAA GGC AAG CAC ATC CAC CTG GGC CAC CTG CGC TTA CAG AGG ACA    1846
203 Glu Glu Gly Lys His Ile His Leu Gly His Leu Arg Leu Gln Arg Thr
204             565                 570                 575
206 CTG CAC AGC ATC GAT CTG GAG ATC CAA GAG GGT AAA CTG GTT GGA ATC    1894
207 Leu His Ser Ile Asp Leu Glu Ile Gln Glu Gly Lys Leu Val Gly Ile
208             580                 585                 590
210 TGC GGC AGT GTG GGA AGT GGA AAA ACC TCT CTC ATT TCA GCC ATT TTA    1942
211 Cys Gly Ser Val Gly Ser Gly Lys Thr Ser Leu Ile Ser Ala Ile Leu
212     595                 600                 605
214 GGC CAG ATG ACG CTT CTA GAG GGC AGC ATT GCA ATC AGT GGA ACC TTC    1990
215 Gly Gln Met Thr Leu Leu Glu Gly Ser Ile Ala Ile Ser Gly Thr Phe
216 610                 615                 620                 625
218 GCT TAT GTG GCC CAG CAG GCC TGG ATC CTC AAT GCT ACT CTG AGA GAC    2038
219 Ala Tyr Val Ala Gln Gln Ala Trp Ile Leu Asn Ala Thr Leu Arg Asp
220             630                 635                 640
222 AAC ATC CTG TTT GGG AAG GAA TAT GAT GAA GAA AGA TAC AAC TCT GTG    2086
223 Asn Ile Leu Phe Gly Lys Glu Tyr Asp Glu Glu Arg Tyr Asn Ser Val
224             645                 650                 655
226 CTG AAC AGC TGC TGC CTG AGG CCT GAC CTG GCC ATT CTT CCC AGC AGC    2134
227 Leu Asn Ser Cys Cys Leu Arg Pro Asp Leu Ala Ile Leu Pro Ser Ser
228             660                 665                 670
230 GAC CTG ACG GAG ATT GGA GAG CGA GGA GCC AAC CTG AGC GGT GGG CAG    2182
231 Asp Leu Thr Glu Ile Gly Glu Arg Gly Ala Asn Leu Ser Gly Gly Gln
232     675                 680                 685
234 CGC CAG AGG ATC AGC CTT GCC CGG GCC TTG TAT AGT GAC AGG AGC ATC    2230
235 Arg Gln Arg Ile Ser Leu Ala Arg Ala Leu Tyr Ser Asp Arg Ser Ile
236 690                 695                 700                 705
238 TAC ATC CTG GAC GAC CCC CTC AGT GCC TTA GAT GCC CAT GTG GGC AAC    2278
239 Tyr Ile Leu Asp Asp Pro Leu Ser Ala Leu Asp Ala His Val Gly Asn
240             710                 715                 720
242 CAC ATC TTC AAT AGT GCT ATC CGG AAA CAT CTC AAG TCC AAG ACA GTT    2326
243 His Ile Phe Asn Ser Ala Ile Arg Lys His Leu Lys Ser Lys Thr Val
244             725                 730                 735
246 CTG TTT GTT ACC CAC CAG TTA CAG TAC CTG GTT GAC TGT GAT GAA GTG    2374
247 Leu Phe Val Thr His Gln Leu Gln Tyr Leu Val Asp Cys Asp Glu Val
248             740                 745                 750
250 ATC TTC ATG AAA GAG GGC TGT ATT ACG GAA AGA GGC ACC CAT GAG GAA    2422
251 Ile Phe Met Lys Glu Gly Cys Ile Thr Glu Arg Gly Thr His Glu Glu
252     755                 760                 765
254 CTG ATG AAT TTA AAT GGT GAC TAT GCT ACC ATT TTT AAT AAC CTG TTG    2470
255 Leu Met Asn Leu Asn Gly Asp Tyr Ala Thr Ile Phe Asn Asn Leu Leu
256 770                 775                 780                 785
258 CTG GGA GAG ACA CCG CCA GTT GAG ATC AAT TCA AAA AAG GAA ACC AGT    2518
259 Leu Gly Glu Thr Pro Pro Val Glu Ile Asn Ser Lys Lys Glu Thr Ser
260             790                 795                 800
262 GGT TCA CAG AAG AAG TCA CAA GAC AAG GGT CCT AAA ACA GGA TCA ATA    2566
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263 Gly Ser Gln Lys Lys Ser Gln Asp Lys Gly Pro Lys Thr Gly Ser Ile
264             805             810             815
266 AAG AAG GAA AAA GCA GTA AAG CCA GAG GAA GGG CAG CTT GTG CAG CTG     2614
267 Lys Lys Glu Lys Ala Val Lys Pro Glu Glu Gly Gln Leu Val Gln Leu
268         820             825             830
270 GAA GAG AAA GGG CAG GGT TCA GTG CCC TGG TCA GTA TAT GGT GTC TAC     2662
271 Glu Glu Lys Gly Gln Gly Ser Val Pro Trp Ser Val Tyr Gly Val Tyr
272     835             840             845
274 ATC CAG GCT GCT GGG GGC CCC TTG GCA TTC CTG GTT ATT ATG GCC CTT     2710
275 Ile Gln Ala Ala Gly Gly Pro Leu Ala Phe Leu Val Ile Met Ala Leu
276 850             855             860             865
278 TTC ATG CTG AAT GTA GGC AGC ACC GCC TTC AGC ACC TGG TGG TTG AGT     2758
279 Phe Met Leu Asn Val Gly Ser Thr Ala Phe Ser Thr Trp Trp Leu Ser
280             870             875             880
282 TAC TGG ATC AAG CAA GGA AGC GGG AAC ACC ACT GTG ACT CGA GGG AAC     2806
283 Tyr Trp Ile Lys Gln Gly Ser Gly Asn Thr Thr Val Thr Arg Gly Asn
284             885             890             895
286 GAG ACC TCG GTG AGT GAC AGC ATG AAG GAC AAT CCT CAT ATG CAG TAC     2854
287 Glu Thr Ser Val Ser Asp Ser Met Lys Asp Asn Pro His Met Gln Tyr
288         900             905             910
290 TAT GCC AGC ATC TAC GCC CTC TCC ATG GCA GTC ATG CTG ATC CTG AAA     2902
291 Tyr Ala Ser Ile Tyr Ala Leu Ser Met Ala Val Met Leu Ile Leu Lys
292     915             920             925
294 GCC ATT CGA GGA GTT GTC TTT GTC AAG GGC ACG CTG CGA GCT TCC TCC     2950
295 Ala Ile Arg Gly Val Val Phe Val Lys Gly Thr Leu Arg Ala Ser Ser
296 930             935             940             945
298 CGG CTG CAT GAC GAG CTT TTC CGA AGG ATC CTT CGA AGC CCT ATG AAG     2998
299 Arg Leu His Asp Glu Leu Phe Arg Arg Ile Leu Arg Ser Pro Met Lys
300         950             955             960
302 TTT TTT GAC ACG ACC CCC ACA GGG AGG ATT CTC AAC AGG TTT TCC AAA     3046
303 Phe Phe Asp Thr Thr Pro Thr Gly Arg Ile Leu Asn Arg Phe Ser Lys
304         965             970             975
306 GAC ATG GAT GAA GTT GAC GTG CGG CTG CCG TTC CAG GCC GAG ATG TTC     3094
307 Asp Met Asp Glu Val Asp Val Arg Leu Pro Phe Gln Ala Glu Met Phe
308         980             985             990
310 ATC CAG AAC GTT ATC CTG GTG TTC TTC TGT GTG GGA ATG ATC GCA GGA     3142
311 Ile Gln Asn Val Ile Leu Val Phe Phe Cys Val Gly Met Ile Ala Gly
312     995             1000            1005
314 GTC TTC CCG TGG TTC CTT GTG GCA GTG GGG CCC CTT GTC ATC CTC TTT     3190
315 Val Phe Pro Trp Phe Leu Val Ala Val Gly Pro Leu Val Ile Leu Phe
316 1010            1015            1020            1025
318 TCA GTC CTG CAC ATT GTC TCC AGG GTC CTG ATT CGG GAG CTG AAG CGT     3238
319 Ser Val Leu His Ile Val Ser Arg Val Leu Ile Arg Glu Leu Lys Arg
320             1030            1035            1040
322 CTG GAC AAT ATC ACG CAG TCA CCT TTC CTC TCC CAC ATC ACG TCC AGC     3286
323 Leu Asp Asn Ile Thr Gln Ser Pro Phe Leu Ser His Ile Thr Ser Ser
324             1045            1050            1055
326 ATA CAG GGC CTT GCC ACC ATC CAC GCC TAC AAT AAA GGG CAG GAG TTT     3334
327 Ile Gln Gly Leu Ala Thr Ile His Ala Tyr Asn Lys Gly Gln Glu Phe
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VERIFICATION SUMMARY   DATE: 07/30/2001
PATENT APPLICATION: US/09/528,031   TIME: 15:59:56

Input Set : **A:\seqlst.txt**
Output Set: **N:\CRF3\07302001\I528031.raw**

L:28 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:29 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]